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Criteria Based Dispatch sends the appropriate providers to the scene

Emergency medical dispatch (EMD) is the first link in a complicated chain of emergency medical services. Any chain is only as strong as its weakest link, and regrettably, many consider EMD to be the weakest link in most EMS systems. This situation is rapidly changing, however. The National Association of EMS Physicians (NAEMSP), under the guidance of Jeff J. Clawson, MD, has adopted a position paper on EMD, which reflects a national trend toward recognizing its importance.¹ Along with the interest from the medical community is a new interest on the part of the dispatch community to strengthen its EMD programs, which often become lost between law enforcement and fire dispatch priorities. This interest in EMD has been generated by dispatchers on local, state and national levels. The American Society of Testing and Materials (ASTM) has adopted new standards for EMD and The APCO Institute (a nonprofit subsidiary of the Associated Public-Safety Communications Officers) has identified EMD as the next priority for its training program development.²

In King County, Wash., we have identified improving EMD as our priority for the 1990s. Through a 1989 survey of dispatchers and paramedics, two primary problems were identified. The first problem was a high level of frustration and dissatisfaction with the system among dispatchers and field personnel. It did not seem to be effective in supporting the dispatchers' ability to make decisions about which EMS units should be dispatched to an incident. Secondly, a lack of medically oriented training for the dispatchers caused inconsistencies in the allocation of EMS resources. Paramedics were frequently, and inappropriately, sent on basic life support (BLS) calls, making them unavailable for advanced life support (ALS). Having identified dispatch as the critical factor in determining the appropriate response level for an EMS call, a committee of paramedics and dispatchers, created by the King County Emergency Medical Services Division, developed and implemented a new EMD program called Criteria Based Dispatch (CBD) in 1990.

What is Criteria Based Dispatch?

Criteria Based Dispatch is based on the recognition that the level of care (ALS vs. BLS) needed by the patient and the urgency of patient care should be the determining factors in the level of response. Critical medical emergencies are those where paramedic intervention within minutes can be crucial to the patient's outcome. Noncritical emergencies are those in which paramedic intervention is not immediately needed and time is not a critical factor in treatment; therefore, a delay of several minutes would make no difference. In other words, we should not be sending a level of care the patient does not need and we should not be sending units Code Red (red lights and siren) if time is not critical to patient care.

CBD uses specific medical criteria to determine the appropriate EMS level of response. It allows critical medical conditions to receive ALS and less critical condi-

tions to receive BLS, based on the seriousness of illness or injury, as determined by the information elicited from the caller. Thus, CBD allows for an efficient use of reported information to allocate EMS resources.

How does CBD differ from a question-based EMD program?

A key assumption in the development of the CBD program is that dispatchers are intelligent professionals who, with experience, recognize that information comes to them in many different ways. The reporting party often provides detailed information in a spontaneous, random and unsolicited fashion, as well as responding to questions. For example, if a caller reports, "I need an ambulance, my husband is having chest pain and now it's much worse," the dispatcher need only determine that the patient is over 35 to immediately know what level of dispatch is appropriate, without further interrogation.

Dispatchers use an All Callers Interrogation (see page 31) to obtain identifying information, establish the chief complaint and determine if lifesaving emergency medical instructions are needed. After this initial interrogation is completed, there are no structured questions the dispatchers must ask. A list of Vital Points or suggested questions are provided on the condition card to help the less experienced dispatcher. None of these suggested questions, however, are required.

What are the criteria?

The criteria are specific signs, symptoms, mechanism of injury or circumstances that indicate the level of criticality of a medical or traumatic condition. Each criteria has been developed with an associated medical diagnosis or condition (see page 32). For example, "chest pain in an adult male over age 35" is assumed to be an MI until proven otherwise and is a criteria for an ALS response. A female less than age 40, who is experiencing chest pain but is not short of breath, nauseated or diaphoretic (ALS criteria) is a BLS Red response.

How many criteria must be found in order to dispatch a response?

Although there may be as many as nine criteria listed for an ALS response in a category, only one need be reported in order to dispatch an ALS response for that patient. As the dispatcher interrogates the caller, he or she searches for ALS criteria first, moving from top to bottom to determine the correct response. The criteria are listed in order of medical importance. If no ALS criteria are met, the dispatcher should then move to the BLS/Red and the BLS/Yellow categories.

What are Vital Points?

The Vital Points section of each chief complaint category (see page 32) provides key areas of interest to aid the dispatcher in the interrogation process. Suggested questions are

CARDIAC/RESPIRATORY ARREST/Adults

1. Does anyone there know CPR? (*Trained bystanders may still need instructions. Ask!*)
2. Get the phone **NEXT** to the person, if you can.
3. Listen carefully. I'll tell you what to do.
 - Get him/her **FLAT** on his/her back on the floor.
 - **BARE** the chest.
 - **KNEEL** by his/her side
 - **PINCH** the nose
 - With your **OTHER** hand, **LIFT** the **CHIN** so the head **BENDS BACK**.
 - **COMPLETELY COVER** his/her mouth with your mouth.
 - **FORCE 2** deep **BREATHS** of **AIR** into his/her **LUNGS** -- just like your blowing up a big balloon.
- REMEMBER.
 - **FLAT** on his/her **BACK**.
 - **BARE** the **CHEST**.
 - **PINCH** **THE NOSE**.
 - With your **OTHER** hand, **LIFT** the **CHIN** so the head **BENDS BACK**. **FORCE 2 BREATHS**.
 - **THEN, COME BACK TO THE PHONE!** If I'm not here, stay on the line.
4. Is he/she **MOVING** or **BREATHING NORMALLY**?
 - (*If yes:*) Roll the person on his/her side and check for breathing until help takes over.
 - (*If no:*) Listen carefully. I'll tell you what to do next.
 - Put the **HEEL** of your **HAND** on the **CENTER** of his/her **CHEST**, right **BETWEEN** the **NIPPLES**.
 - Put your **OTHER HAND** ON **TOP** of **THAT** hand.
 - **PUSH DOWN FIRMLY, ONLY** on the **HEELS** of your hands, 1-1/2 to 2 inches
 - Do it 15 times, just like you're **PUMPING** his/her chest. (*Count: 1-2-3...*)
 - **MAKE SURE** the **HEEL** of your hand is on the **CENTER** of his/her chest, **RIGHT BETWEEN** the **NIPPLES**.
 - Pump 15 times.
 - Then, **PINCH** the **NOSE** and **LIFT** the **CHIN** so the head **BENDS BACK**.
 - **2 MORE** breaths and **PUMP** the **CHEST** 15 times.
 - **KEEP DOING IT: PUMP** the **CHEST** 15 times. Then 2 **BREATHS**
 - **KEEP DOING IT UNTIL HELP CAN TAKE OVER**.
 - I'll stay on the line.

NOTE: IF CALLER REPORTS VOMITING, INSTRUCT CALLER TO:

- Turn his/her head to the side.
- Sweep it all out with your fingers before you start mouth-to-mouth.

provided to elicit information from the caller. Entry-level dispatchers may benefit more often from these questions and rely on them less frequently as they gain experience.

The Vital Points also include questions to gather information from the caller, which is then given as a Short Report to the responding units. These questions may not obtain information essential in making the initial dispatch decision, but provide the responding units with a more complete picture of the situation. When interrogating the caller for a diabetic patient, for instance, Short Report questions might include, "When did the patient last eat?" and "When did the patient last take medication?" This is nice-to-know information but is not essential to determine the level of response.

A Short Report should contain chief complaint, age, sex, pertinent related symptoms and any medical/surgical history, if relevant. The medical history of a patient is not always required and is *never* the sole criteria for the level of response sent. The Short Report should also provide information on other units responding and any presenting danger to the aid crew. The category Assault/Trauma, for example, includes the Short Report question: "Is the suspect/assailant still present?"—vital information for the first responding units, but not important for the dispatcher to decide on an ALS or BLS unit.

What are the levels of response?

In the King County system there are three possible levels of response provided by the CBD guidelines. The first set of criteria

indicates a medical emergency that requires ALS treatment (time is critical to survival). In this case ALS and BLS units are dispatched simultaneously, responding red lights and siren. A BLS unit is always sent in addition to the ALS unit because they (BLS) will arrive at the scene on average in five minutes. The average response time for an ALS unit is 10 minutes.

The second set of criteria indicates a medical emergency that requires only BLS care; however, time is still an important factor. This is a BLS/Code Red response, and a BLS unit responds with red lights and siren.

The third set of criteria indicates a nonemergent call where time is not critical. This is a BLS/Code Yellow response, and the unit responds *without* red lights and siren at surface traffic speed.

How flexible is Criteria Based Dispatch?

The criteria under each level of response are approved by the medical director of each system that implements CBD. A specific criteria easily can be moved from an ALS level to a BLS level in your system. A jurisdiction may also change the response mode. By definition, all ALS responses should be Code Red; however, BLS units do not have to respond Code Yellow. All BLS responses may be Code Red, if desired. The legal authority and medical directors within each jurisdiction must weigh the benefits of responding Code Red against the potential liability of damage caused in an accident responding Code Red to a nonemergent call. If a call is dispatched Code Yellow and the patient deteriorates, the responding units may

All Callers - Interrogation

1. What is the problem?
2. What is the address of the patient?
3. What is the telephone number you are calling from?
4. What is your name? (*Optional*)
5. Is the person conscious (*able to talk*)?

(*If no*): Go directly to **Question #6**.

(*If yes*): Go directly to **Other Conditions**.

6. Is the person breathing **Normally**? If uncertain: **Go and see** if the chest rises, then come back to the phone.

(*If no*): Go directly to **Unconscious and not breathing normally** below.

(*If yes*): Go directly to **Unconscious and breathing normally** below.

7. I have advised the dispatcher to send help* - **Stay on the line**. (Do not put the caller on hold, unless necessary.)

Unconscious and not breathing normally: *Dispatch MEDIC response.*

Do you want to do CPR - **I'll help you!**

(*If no*): Reassure the caller that the dispatcher has been advised* and stay on the line, if possible.

(*If yes*): Go to **Cardiac/Respiratory Arrest**, Section III. Determine appropriate age group.

Unconscious and breathing normally: *Dispatch BLS response.*

Go directly to **Unconscious/Unresponsive/Syncope**, Section II. (*Dispatch MEDIC response if needed.*)

Other Conditions:

Determine appropriate response level and dispatch aid.

I have advised the dispatcher to send help* - **Stay on the line**. (Do not put the caller on hold, unless necessary.)

* Local agency protocols for acceptable wording should be followed.

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Background Information

Chest pain may be caused by many conditions, some of which are critical. Although it is often difficult to determine which calls are critical, some of the following information may be helpful.

Critical causes of chest pain:

Myocardial Infarction occurs when a portion of the heart muscle dies due to lack of oxygenated blood flow to the heart muscle. Typically the pain associated with myocardial infarction is described as a tightness, crushing or squeezing in the chest. Associated symptoms that occur with myocardial infarction include:

- Shortness of breath
- Diaphoresis
- Nausea
- Vomiting
- Radiation of pain to left arm, jaw, neck, shoulder or back

Any or all of these symptoms may occur in an individual with a myocardial infarction.

Angina Pectoris is chest pain which occurs because of a lack of blood flow to heart muscle. It is distinguished from myocardial infarction by its transitory nature and is usually relieved by rest and/or Nitroglycerin (NTG).

Chest Pain/Discomfort/Heart Problems

Supraventricular Tachycardias (SVT) are a cause of rapid heart rates (RHR). The criteria for a MEDIC response is RHR's associated with chest pain or medical history of a RHR. There are many causes of rapid heart rates which are not critical incidents and require only BLS evaluation.

Non-critical causes of chest pain include chest wall pain, pneumonia, pleurisy, esophageal reflux and/or spasm, broken ribs, costochondritis and pulled muscles.

Dispatch Criteria

- 7M1 Unconscious/not breathing
- 7M2 Male > 35 yrs
- 7M3 Female > 40 yrs
- 7M4 With any of following symptoms, 15-35 yrs:
 - Short of breath
 - Nausea
 - Diaphoretic
- 7M5 Rapid heart rate w/ chest pain, or medical history of rapid heart rate
- 7M6 Syncope
- 7M7 With cocaine/crack use

Medic Response

- 7R1 Male < 35 yrs w/o MEDIC criteria
- 7R2 Female < 40 yrs w/o MEDIC criteria
- 7R3 Rapid heart rate w/o MEDIC criteria
- 7R4 3rd party report, caller not with patient

BLS Red Response

- 7Y1 Male < 35 yrs. or female < 40 yrs., w/chest wall trauma w/o MEDIC criteria

BLS Yellow Response

Vital Points

- Where is the pain located?
- Does the patient feel pain anywhere else in the body?
- How long has the pain been present?
- Does the pain change when the person breathes or moves?
- Is the patient short of breath or does it hurt to breathe?
- Is the patient nauseated or vomiting?
- Is the patient sweating?
- Is the patient experiencing rapid heart rate w/the chest pain?
- Does the patient have a history of rapid heart rate?
- How does the patient feel when he/she sits up?
- Is the patient taking nitroglycerin?
- Has the patient ever had heart surgery or an MI?

Pre-arrival Instructions

- Have patient sit or lie down.
- Keep patient calm.
- Does the patient have NTG? Has the patient taken one?
 - If no, take as your physician has directed (patient seated).
- Gather patient meds.

Short Report

- Age
- Sex
- Chief complaint
- Dispatch criteria used to determine response
- Pertinent related symptoms
- Medical/surgical history, if relevant
- Other agencies responding

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be upgraded to a Code Red. It is recognized that not all EMS systems will have the same needs or the same resources and this flexibility is designed into the program.

What if my community does not have a tiered response system?

The CBD guidelines may still be used whether or not you have a tiered response system such as King County's. The first two sets of criteria are simply combined into one group of criteria, and all medical emergencies that fall into this group would receive either an ALS/Code Red response or a BLS/Code Red response. All incidents in the third set of criteria would be a BLS/Code Yellow response.

What are pre-arrival instructions?

Pre-arrival instructions include simple first aid procedures, which can be easily followed by the caller. These instructions will always be given after the initial dispatch unless there is not time due to call volume. They have a psychological benefit to the caller, as they give the person something to do while he or she is waiting for medical aid to arrive. These pre-arrival instructions should be approved by the medical directors in each community.

Emergency Medical Telephone Instructions include the life-saving instructions for unconscious/breathing normally, cardiac/respiratory arrest (see page 30) choking and childbirth. These instructions have been used in King County for more than 10 years and have been demonstrated to increase survival from pre-hospital cardiac arrest in the community.^{2,5}

How do guidelines differ from protocols?

Protocols generally define specific treatment, questions or action to be taken during patient care. Guidelines, however, provide direction and assist in decision making, without structuring the course of action to the point that it becomes restrictive or limiting for the dispatcher. In CBD, the guidelines are used to define appropriate levels of care in order to assist dispatchers in determining whether to send ALS or BLS units.

What training is required for dispatchers?

The basic training program for CBD requires dispatchers to attend a 24-hour course and complete a 6-hour ride-along on a medic unit. Included in this training is an overview of the rationale for CBD, general considerations for dispatchers in emergency medical dispatching, medical/legal considerations, a three-hour section on general medical background, a four-hour session on emergency medical telephone instructions, and 11 hours of training in the 25 complaint categories that comprise the CBD guidelines. This includes a brief review of the medical background, a detailed review of the response criteria, the vital points, and pre-arrival instructions pertinent to each chief complaint category. We have observed the benefits of this enhanced level of training in increased self-confidence in dispatchers and more credibility with field personnel within our system. These dispatchers are also capable of dispatching other emergency units such as firefighters and police.


How can the system be evaluated?

The CBD system is monitored at three levels. First, an in-house evaluation form is available for individual dispatchers, peer evaluation and supervisor evaluation. Second, all dispatchers, EMTs and paramedics within the EMS system are encouraged to use a suggestions/comments/attaboys form to provide

feedback to communication centers and to the King County EMS Division. Specific problem areas may be reviewed and changes in the guidelines made if necessary. Third, each dispatch criteria is given a code, called an Initial Dispatch Code (IDC). This IDC is included on all 911 Medical Incident Report forms, and allows us to compare the criteria for which the call was dispatched with the actual disposition of the patient. In this way we can examine the effectiveness of individual criteria and differences, which may exist among various paramedic or dispatch agencies.

Does it Work?

Criteria Based Dispatching has been in place in most dispatch centers in King County for more than two years. Paramedics, EMTs and dispatchers who have used CBD believe the system to be rational and effective. We now have a strong first link in the chain of EMS. The Emergency Medical Telephone Instructions, including lifesaving instructions in CPR, have been used in King County for more than 10 years. The benefits to the EMS system as a result of this part of the CBD program have been well documented in the medical literature.^{2,6}

We have collected data on the use of the CBD guidelines since implementation of the program. This scientific data is currently under intensive review to determine whether the CBD guidelines have improved the efficiency of the EMS system in King County. The preliminary findings show a decrease in the frequency of requests by BLS units at the scene for the dispatch of ALS units. The results have also demonstrated a decrease in the frequency of dispatch of ALS units for two specific medical conditions, which no longer require an ALS response using the CBD guidelines. These results are encouraging and it is our goal to contribute to the next frontier in scientific research on emergency medical dispatching. 

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